THE AMERICAN REVIEW OF TUBERCULOSIS

OFFICIAL JOURNAL OF THE AMERICAN TRUDEAU SOCIETY

ABSTRACTS

EDITOR

MAX PINNER, New York, N. Y.

EDITORIAL BOARD

JOHN ALEXANDER, Ann Arbor, Mich.
J. BURNS AMBERSON, JR., New York, N. Y.
E. R. BALDWIN, Saranac Lake, N. Y.
H. J. CORPER, Denver, Col.
F. S. DOLLEY, Los Angeles, Calif.
BRUCE H. DOUGLAS, Detroit, Mich.
L. U. GARDNER, Saranac Lake, N. Y.
ROSS GOLDEN, New York, N. Y.
ESMOND R. LONG, Philadelphia, Pa.
LEWIS J. MOORMAN, Oklahoma City, Okla.
D. W. RICHARDS, JR., New York, N. Y.

VOLUME LI

JANUARY-JUNE, 1945

PUBLISHED MONTHLY

AT MOUNT ROYAL AND GUILFORD AVENUES, BALTIMORE 2, MD.
BY THE NATIONAL TUBERCULOSIS ASSOCIATION

THE

AMERICAN REVIEW OF TUBERCULOSIS ABSTRACTS

VOLUME LI JANUARY, 1945 ABST. No. 1

Acute Diffuse Fibrosis of Lungs.—Four cases of pulmonary disease are described, all presenting new, and thus unusual, clinical pictures. Although the symptoms of each case differed somewhat from those of the others, they bore such a striking resemblance, that having seen 2 cases, the correct diagnosis was suggested when the third appeared. The anatomical picture was one equally unfamiliar. The lungs were the seat of a wide-spread connective tissue hyperplasia throughout the interstitial structures. The alveolar walls were tremendously thickened; in the early stages of the process crowded with fibroblasts which, at later stages, were replaced by mature scar tissue. It is noteworthy that the alveoli themselves contained little or no cellular inflammatory exudate in contrast with that which is seen in pneumonia. These pulmonary changes caused an extreme degree of dyspnoea and cyanosis, and, after a matter of only a few weeks, led to dilatation and hypertrophy of the right ventricle of the heart so that at the end, in at least one patient, grave symptoms of myocardial insufficiency developed. From the pathological anatomy and the symptoms of these 4 patients, a clinical picture of an uncommon and remarkable disease may be reconstructed. Pulmonary inflammation of the peculiar type described develops insidiously with little local or constitutional disturbance. There are none of the symptoms which usually mark the advent of bronchopneumonia; there is little fever, the patients are not incapacitated or forced to bed, the leucocytes are little if any increased. Very shortly after the onset, connective tissue begins to proliferate within the alveolar walls, and soon dyspnoea comes on and grows increasingly severe as a result of the disturbance of the relation of the capillaries to the alveolar lumen, and the gradual compression of alveolar spaces by the rapidly advancing fibrosis. Two patients died of slowly progressive suffocation. If this stage of the disease is outlived there is increasing evidence of myocardial insufficiency. As pulmonary fibrosis increases and spreads, the circulation in the lungs is impeded, the pressure in the pulmonary artery is increased, and soon the right ventricle becomes dilated and hypertrophied. In 3 of the 4 cases, the right ventricle was appreciably enlarged and its walls thickened, although in one case only forty-six days had elapsed from the onset of symptoms to the time of death and in another only thirty-one days. As the pressure in the pulmonary circulation steadily rises a constantly increasing burden of work is thrown upon the right side of the heart, and sooner or later the symptoms of congestive heart failure appear and steadily advance until finally death occurs from myocardial insufficiency. It is believed, however, that patients may recover from localized forms of this disease. About the cause of this disease nothing is known. The absence of organisms suggests a viral aetiology. The possibility of a chemical irritant has, however, to be considered. (Illustrated.)—*Acute Diffuse Interstitial Fibrosis of the Lungs, L. Hamman & A. R. Rich, Bull. Johns Hopkins Hosp., March, 1944, 74: 117.*—(*J. S. Woolley*)

Oil Aspiration Pneumonia.—Twenty cases of oil aspiration pneumonia were diagnosed clinically within a period of seven months at Welfare Hospital for Chronic Disease in New York City. Autopsy confirmation was obtained in 5 cases. A review of 300 consecutive autopsies disclosed 13 additional cases not included in the report. Some of these cases might have been diagnosed antemortem if the condition had been borne in mind. Among the 20 cases the sexes were equally divided; all were adults ranging in age from twenty-six to eighty-two years. An accompanying disease contributing to the aspiration of oil was present in all instances. The patients could be classified into three groups: neurological, cerebrovascular and arthritics. In the neurological group, there were 6 cases of multiple sclerosis, one spastic pseudosclerosis, one Little's disease and one cerebellar syndrome. There were 4 hemiplegics in the cerebrovascular group. In the third group were 7 patients with advanced chronic rheumatoid arthritis; one in this group also had an accompanying Parkinson's syndrome. The predisposing and contributing factors in the development of oil aspiration pneumonia were the accompanying dysphagia, weakness and debility. The most common causative agent was liquid petrolatum given for constipation. A positive history of having taken considerable quantities of liquid petrolatum was obtained in 12 cases. The oil intake was usually an ounce, either daily or every second or third day, over a period of from two months to two years. Two cases, obtaining vitamin therapy, received wheat germ oil frequently for a period of one to two months. In 6 cases, no history could be obtained of receiving any specific oils. Nevertheless, the roentgen examination of the chests revealed changes suggestive of oil aspiration pneumonia. One case was proved at autopsy. All patients received considerable quantities of milk daily; this may have been a factor in some of the cases. A diagnosis of oil aspiration pneumonia should be considered in dysphagic and debilitated patients whenever serial roentgenograms reveal evidences of a protracted bronchopneumonia, even when no history of oil ingestion is obtainable. Clinical signs and symptoms may be of little or no value. In some cases no signs or symptoms were elicited, while in others a few moist râles at the bases, and dulness were present. A few patients had a low grade fever; a higher temperature usually indicated a superimposed acute bronchopneumonia or some other infection. The roentgen examinations revealed an increase in the size, number and density of the lung markings, which had a tendency to become confluent. The root shadows were enlarged. Acinous and lobular shadows were present. Some were confluent, forming larger areas of consolidation. The diminution in aeration depended upon the extent of involvement. The peripheral portions of the lungs were not involved. These were superimposed upon diffuse interstitial changes. The findings were persistent and showed little or no regression. Progression was manifest with continued oil administration. A superimposed bronchopneumonia may be present which may resolve. The diagnosis of oil aspiration pneumonia should always be considered when, on serial studies, there are evidences of a protracted bronchopneumonia in an individual with a history of oil administration and dysphagia. The incidence of oil aspiration pneumonia will be reduced if the use of oily medications and liquid petrolatum is kept at a minimum, or discontinued in the aged, bedridden, debilitated, and those suffering with dysphagia.—*Oil Aspiration Pneumonia, M. Moel & H. K. Taylor, Am. J. Roentgenol., February, 1943, 49: 177.*—(*W. H. Merrit*)

Echinococcus Cyst.—Echinococcus disease is rare in North America, but in the past decade certain valuable diagnostic and prognostic features in the roentgen examination have been described. A case is reported and the historical aspects of the disease, first described by Béclère, discussed. Cysts may change shape during respiration and large cysts tend to produce enlargement of the portion of the thorax in which they lie, resulting in some displacement of the mediastinal struc-

tures to the opposite side. They are not always sharp in outline, due to inflammation and varying degrees of atelectasis in the adjoining lung. As hydatid cysts enlarge a bronchial communication may develop in the adventitia surrounding the cyst so that, upon coughing, air may enter the potential space between the membrane of the hydatid vesicle and the adventitia. Although this is rarely seen with echinococcus cysts, when it is found it is pathognomonic. When the cyst membrane becomes detached, death of the parasite presumably occurs. Frequently when the cysts rupture they become infected and the membrane may be seen floating in the fluid. At times expectoration of the cystic fluid and membrane may occur resulting in spontaneous cure.—*Echinococcus Cyst of the Lung, W. A. Evans, Radiology, April, 1943, 40: 362.*—*(G. F. Mitchell)*

Infected Lung Cyst.—Cystic disease of the lung is now more frequently recognized and new advances in thoracic surgery have made possible curative procedures so that the importance of diagnosis has been enhanced. More recently a practical aspect of lung cysts has been described, namely, their relationship to chronic pulmonary suppuration. Maier and Haight elaborated on this and also have stressed the importance of obtaining a biopsy from the wall of any fluid pocket in the chest, usually at the time of drainage. The true cyst develops from a bronchial bud. Therefore, any bronchial communication may be open or closed so that the cyst may contain fluid, fluid and gas or gas alone. If the patency of the communication varies from time to time, contents of the cyst may also change. The presence of a bronchial communication may lead to the development of infection within the cyst producing the signs and symptoms of pulmonary abscess or encysted empyema. The diagnosis may be difficult. If, in addition to the finding of pus on thoracocentesis, there is a history of repeated pulmonary infections presumed to be pneumonia, or of repeated drainage of a fluid pocket without permanent result, the possibility of infected lung cyst should be considered also. Fungus infections can usually be excluded by bacterial study, but biopsy at the time of drainage is the best method of exclusion of lung cyst. It is possible that some chronic recurring encapsulated empyemata may be infected lung cysts. From the roentgenological point of view, the finding of a sharply encapsulated, well defined pocket standing out separately from the remainder of the chest, the absence of pleural thickening, a low position of the area, the absence of retraction of mediastinum or diaphragm toward the encapsulated pocket, and the finding of a relatively thin wall when the pocket contains air should suggest the possibility of a lung cyst. The demonstration of trabeculae within the cyst is also important. Biopsy of the wall at the time of drainage is the best means of diagnosis. Radical surgery, preferably lobectomy, is the best procedure for obtaining a permanent cure. Cases are reported illustrating the (*1*) development of a bronchial fistula in a fluid-filled cyst, (*2*) multiple infected cysts simulating loculated empyema or lung abscess, (*3*) two single large cysts simulating an encapsulated empyema, and (*4*) eventual development of gas-containing cysts seen at birth into multiple pus-filled pockets simulating lung abscesses.—*Infected Lung Cyst, L. G. Rigler, Radiology, May, 1943, 40: 485.*—*(G. F. Mitchell)*

Treatment of Solitary Pulmonary Cysts.—The author presents 7 cases of solitary pulmonary cysts. Roentgenologically the appearance was varied, depending upon the complications The classical thin-walled empty cyst without surrounding infiltration and fluid level was seldom seen. More often it was complicated by infiltration and fluid level within the cyst, surrounding infiltration, pneumothorax with or without empyema or fluid, and at times the cyst was full and was seen as a dense, oval-shaped, clearly defined mass. Six of the 7 cases presented themselves for treatment—and in each case attention was focused upon the cyst by some accident or complication: (*1*) infection; (*2*) infection with

rupture, causing pyopneumothorax; (*3*) rupture without infection, causing a tension pneumothorax; (*4*) rupture with discharge of sterile fluid into the pleural cavity; (*5*) progressive ballooning-out of the cyst. Of the 6 cases operated on (the seventh was asymptomatic and did not come to operation), 4 represented congenital cysts of pulmonary origin and, of these, 2 were cystic accessory lobes. Of the other 2, one was probably an emphysematous bulla, and the sixth case originally was probably lung abscess. The treatment of asymptomatic or silent cysts is also discussed. In contrast to Singer, Eloesser and Maier, the author believes asymptomatic cysts are uncommon, are too exposed to complications and should be operated on if possible. The surgical treatment consists of extirpation, lobectomy, or pneumonectomy. Preoperatively, drainage of empyema or infection within the cyst cavity may be necessary. Drainage postoperatively is advised if the cyst has been opened into. Complete expansion of the lung is striven for, and one or two pleural aspirations may also be necessary following lobectomy or pneumonectomy.—*The Surgical Management of Solitary Cysts, or Cyst-like Structures, of Pulmonary Origin, M. D. Tyson, Ann. Surg., July, 1943, 118: 50.*—(*D. J. Rednor*)

Roentgen Treatment in Chronic Asthma.—One hundred consecutive cases of asthma were given courses of roentgen therapy. A cross-fire technique, employing 2 anterior, 2 posterior and 2 lateral portals, was used with average total dosage of between 800 and 1600 r administered through the 6 portals. Most of the patients expectorated variable amounts of mucus. Within a period of three days to three weeks most individuals coughed up large amounts of thick, stringy purulent mucus, oftentimes pitted with plugs, and usually in greater amounts than had previously occurred. In practically all cases where the individual was able to rid himself of large amounts of mucus, improvement was almost instantaneous and proportionate to the amount brought up. Generally within two or three weeks the expectoration of mucus had entirely ceased and, along with this change the patient became free of asthma. During the first year of observation, 35 patients were given two courses of therapy and 15 patients three courses of therapy; the remaining 50 received a single course. The amount of radiation given is within a safe range of dosage and could be repeated yearly over a period of eight to ten years without damaging the skin or producing pulmonary fibrosis. The results were considered excellent in 39 patients, good in 40, fair in 13, poor in 6, and insignificant in 2. The good results were obtained in cases showing infection in the bronchial tubes or paranasal sinuses or both. Radiation therapy in asthmatic sufferers free of infection seems to have little or no effect. All patients were given 5,000 units of vitamin B1 daily by hypodermic injection for control of nausea following the radiation therapy.—*The Therapeutic Value of Roentgen Treatment in Chronic Asthma, W. M. Hull, R. M. Balyeat & L. K. Chont, Am. J. Roentgenol., February, 1943, 49: 227.*—(*W. H. Merrit*)

Pathology of Bronchial Asthma.—A uniform pathological picture in deaths from bronchial asthma is not found at the autopsy table. In some cases a definite pathological diagnosis can unhesitatingly be made, because there is a very characteristic picture. However, this picture may be absent in patients who undoubtedly were correctly diagnosed clinically as asthmatics and who died a typical suffocation death. In these cases hypersecretion of thick mucus must have been the cause of the asthmatic seizures. When the characteristic picture is present the main seat of morphological alterations is in the bronchi, both large and medium, and in the bronchioli. The bronchioli may contain spirally wound mucous threads which form the nuclei of Curshman's spirals. Apparently these threads may be formed by the surface epithelium alone in the absence of mucous glands. The medium and larger bronchi contain an abundance of thick mucus and Curshman's spirals, and the epithelium shows

advanced degeneration. The walls of the bronchi participate in the changes. The basal membrane shows hyaline thickening, the submucosa is oedematous, the capillaries are dilated, and the tissue is infiltrated with numerous cells, mainly eosinophils, lymphocytes and plasma cells. The longitudinal elastic membrane and the circular muscular coat are markedly hypertrophied probably as a result of bronchospasm. The mucous glands show dilatation and herniate into the lumen of the bronchus. The peribronchial wall also shows a heavy infiltration of eosinophils and other cells. The lungs commonly show emphysema and atelectasis, and the right heart may be enlarged.—*Zur pathologischen Anatomie des Asthma bronchiale, C. Wegelin, Schweiz. med. Wchnschr., January 8, 1944, 74: 8.*—(*H. Marcus*)

Disability in Silicosis.—In industries where there are dust hazards preëmployment records should be obtained containing the family history, especially regarding tuberculosis, clinical history, occupation history, record of physical examination including lung function tests and X-ray report. The roentgenogram should be of excellent and constant quality and the consultant should be familiar with the type of work and the dust hazard of the work for which the men are employed. The criteria for the rejection of applicants for jobs entailing a silica hazard on the basis of preëmployment films are (*1*) inactive pulmonary tuberculosis, (*2*) extensive primary tuberculosis in persons under thirty, (*3*) primary tuberculosis of questionable stability, (*4*) inactive adult type tuberculosis, (*5*) suspected silicosis especially with a history of exposure, (*6*) emphysema and (*7*) other pathological findings of known or unknown aetiology making the applicant an unfavorable risk. When employed, a careful record of absenteeism with special reference to pulmonary illness should be kept, routine check-ups done and X-ray films made, and, when indicated, lung function tests repeated. Roentgen evidence of disability is often unreliable and inaccurate, for uncomplicated silicosis associated with moderate fibrosis may be more disabling than massive lesions. According to work done by Irwin, this may be due to the fact that more dyspnoea is produced by thickening and fibrosis of the alveolus itself than by the nodular fibrosis. When the X-ray film shows superimposed infection, disability should be anticipated and with roentgen evidence of active tuberculosis present one may state that disability is total and permanent. The diagnosis of superimposed tuberculosis may be difficult and should be confirmed by laboratory tests and serial films. The author concludes that disability in industrial lung diseases cannot be accurately estimated by X-ray examination alone.—*Correlation of Disability with Roentgen and Clinical Findings in Silicosis, P. Bovard, Radiology, July, 1943, 41: 11.*—(*G. F. Mitchell*)

Disability in Silicosis.—Since disability in silicotics varies greatly and cannot be estimated by roentgenograms such disability must be estimated in terms of altered function of the lungs. Respiratory function tests are of two main types, those made with the patient at rest and those obtained during exercise. The former include determination of vital capacity, complemental air, tidal air, reserve air, functional residual air and residual air. Examinations of the patient during exercise are probably more practical and less complicated, since disability is measured in percentage of work ability. These tests include respiratory rate and amount of air breathed before, during and after exercise. A bicycle ergometer is used for this work, the subject pedaling at the rate of 20 miles per hour. Normal persons get more air during exercise by an increase in the depth of respirations, while a person with respiratory disability can only obtain required air by an increase in the rate of respirations.—*Correlation of Disability with Roentgen and Clinical Findings in Silicosis: Part II, J. W. G. Hannon, Radiology, July, 1943, 41: 13.*—(*G. F. Mitchell*)

Pneumonoconiosis in Boiler-scalers.—The composition of scale within boilers consists

mainly of iron, sodium, magnesium and calcium as chlorides, sulfates and phosphates, and of an insoluble silica residue. The diagnosis of the disease can only be made by an occupational history and X-ray examination. The physical signs and complaints are those associated with pulmonary fibrosis and reduction in respiratory efficiency. A case report is given of a forty year old man who worked as a boiler-scaler for fourteen years, beginning at the age of eleven.—*Pneumoconiosis in Boiler-scalers, P. G. Todd & D. Rice, Lancet, March 4, 1944, 246: 309.*—(*H. Marcus*)

Lung Changes in Welders.—Electric arc welding which is done in large rooms and where the fumes are not allowed to concentrate excessively near the breathing level does not cause any lung changes even after many years of work. Excessive inhalation of concentrated fumes, especially in confined and unventilated spaces, may cause siderosis in the lungs in from six to ten years. The siderosis so produced consists only of inert iron pigment deposits in the lymphatics, without fibrous tissue proliferation and without progressive changes after exposure is materially decreased. Electric welding or siderosis do not predispose to tuberculosis or other lung infections. The siderosis of welding causes no functional impairment of the lungs and, therefore, no symptoms referable to the lungs. Acute irritative phenomena of the throat may occur with too prolonged confined work in dense clouds of fumes, but these appear to be transitory reactions leaving no residual impairment. Any respiratory involvement may be prevented in welding, even with the most confined and prolonged work, if proper precautions are taken, either by adequate exhaust ventilation, ventilated helmets or positive pressure respirators.—*Further Observations on Lung Changes in Electric Arc Welders, O. A. Sander, J. Indust. Hyg. & Toxicol., March, 1944, 26: 79.*—(*G. C. Leiner*)

Dust Hazard in Tremolite Talc Mining.—A study of the tremolite talc mining and milling industry in northern New York State is reported. Talc, a hydrous magnesium silicate, in this region is of the fibrous variety known as asbestine; it is mingled with two other fibrous silicates, tremolite and anthophyllite. Analysis of material from both mines and mills gave consistently a free silica content of 1 per cent or less. Microscopical studies of dust showed fine, straight needle-like fibres. Dust counts in mining ranged from 6 to 5,000 million particles per cu. ft.; in milling, from 20 to 215 million particles per cu. ft. In a group of 221 tremolite talc miners and millers advanced pulmonary fibrosis was found in 32 men (14.5 per cent). All cases of fibrosis occurred among those men who had worked in tremolite talc for ten years or longer (107 men) giving an incidence for this group of 29.9 per cent. Eighteen cases were selected for special study because these men had never worked in any other dusty industry. Thirteen of the 18 had one or more symptoms referable to the lungs. Ten complained of dyspnoea, 7 of chronic cough and 3 of chest pain. Five complained of excessive fatigue. All 18 showed limited chest expansion. Thirteen showed abnormal lung signs and 13 showed curving of the nails or clubbed fingers. Cardiac hypertrophy was observed in one case and auricular fibrillation in another. The group tended to present an undernourished and drawn appearance. Dyspnoea was unusually pronounced in relation to the extent of the fibrosis seen in the roentgenograms. The type of fibrosis seen in the roentgenograms was very fine and diffuse, frequently showing an appearance of soft haziness to which the term "ground glass" used in describing certain cases of asbestosis could be applied. In a number of cases there was, in addition, a distinctly granular appearance and in some nodulation which might be confused with silicosis. In certain films soft conglomeration also occurred. The fibrosis tended to be more marked on the right side, the mid-portions of the lungs and the bases. The hilar nodes showed a slight or moderate increase in density. Evidence of obliterative pleuritis and emphysema was also

present in some cases. In some a blurring or "shagginess" of the cardiac outline was noticeable. The incidence of healed primary and reinfection type tuberculosis was the same as in other industrial groups. In the total group of 221 talc workers there were 29 (13.1 per cent) cases of healed primary tuberculosis and 6 (2.7 per cent) cases of healed reinfection type tuberculosis. Five cases (2.2 per cent) were considered, on the basis of the roentgenographic appearances alone, to show clinically significant tuberculosis. This is slightly higher than the average rate in industrial groups of about 1.2 per cent. Among the 18 cases of fibrosis in men exposed only to talc, clinically significant tuberculosis appeared to be a complicating feature in 3 cases (16.6 per cent). A most interesting finding was the presence in 14 instances (6.3 per cent of the 221 talc workers originally examined roentgenographically) of what appeared to be deposits or plaques of opaque material (perhaps talc or calcium) on the visceral pleura, including the region of the diaphragm and occasionally the pericardium. The plaques varied in size from a single, linear-appearing deposit of a few centimeters in length in the region of the diaphragm to massive deposits bizarre in shape, extending over a large part of the lung fields. They were characterized not only by irregularity of shape, but by marked variations in degree of density, and by sharpness of their borders. So far as can be ascertained, previous infection played no rôle in their production. The underlying lung tissue showed fibrosis in some cases. When this fibrosis was absent there was no associated enlargement of the hilar nodes. There were no signs or symptoms attributable to the plaques. Gardner attributes fibrosis in tremolite talc workers to the contaminating presence of free silica, but inasmuch as the free silica content of the twelve samples of mineral from talc mills and mines analyzed in the present study was found to be practically negligible (less than 1 per cent) it seems reasonable to suppose that the fibrosis observed in these cases is primarily the result of inhalation of the silicates. Microscopical study has shown that this dust is largely fibrous in character, and it may be that this physical characteristic is responsible for the pathology of tremolite talc fibrosis. The possibility of action analogous to that which occurs in asbestosis is suggested by several facts: (*1*) the chemical and physical similarity between the minerals in this area and those found in asbestosis; (*2*) the disability in tremolite talc fibrosis, like that in asbestosis, tends to be greater than would be expected from the extent of the lesion as seen in the roentgenogram. Roentgenologically the talc fibrosis resembles early asbestosis in its fineness, diffuseness and "ground glass" quality; in addition, asbestosis cases may show a mottled or nodular appearance similar to that seen in the more advanced cases of talc fibrosis. One conspicuous dissimilarity between asbestos and talc dust is the absence of any change resembling "talc plaques" in the lungs of asbestos workers. The writers conclude that tremolite talc is a silicate dust, capable, like asbestos, of causing a disabling pneumonoconiosis.—*The Dust Hazard in Tremolite Talc Mining: Including Roentgenological Findings in Talc Workers, W. Siegal, Adelaide R. Smith & L. Greenburg, Am. J. Roentgenol., January, 1943, 49: 11.—(W. H. Merrit)*

Bagassosis.—A thirty-two year old Negro male developed, three weeks prior to his hospital admission, cough, productive of clear, mucoid sputum, weakness, malaise. One week prior to his admission he started to suffer from dyspnoea and fever. For the past eight months his work had consisted first in moving bales of damp cane grindings from the sugar house to the fields, later in moving the dry bagasse from the fields to the railroad cars. On physical examination the only abnormal findings were fine râles over the right lung base. X-ray examination showed miliary infiltrations throughout both lungs. After twenty days, slight clearing was seen on the roentgen picture, and further clearing was noted in the subsequent five months. No tubercle bacilli were found in the sputum. From these findings and from the history the

diagnosis of bagassosis was made. It is pointed out that bagassosis may be contracted even when working out of doors with the dried material and that recovery may occur over a period of a few months.—*Bagassosis: A Case Report, S. Chaille Jamison, Margaret Strange Bryan & Jane Matthews Day, New Orleans M. & S. J., January, 1944, 96: 291.*—(*G. C. Leiner*)

Tobacco and Pulmonary Disease.—In the past, heavy tobacco smoking has been indicted for postoperative pulmonary complications but statistical proof was lacking. A study of 1,257 consecutive cases of abdominal operations in adults provides the statistical background of this communication. The cases were unselected, and included both men and women. The operations included are simple appendectomies, and drainage of appendiceal abscesses, herniotomies, pelvic operations on women, midabdominal operations, upper abdominal operations, and genitourinary operations. The anaesthesia was of the closed circuit type with nitrous oxide and oxygen and minimal amounts of ether. The premedication was either atropine, or an omnopon scopolamine mixture. Atropine showed a slight tendency towards lessening the pulmonary complications, but statistically the difference was not significant. The patients were divided into smokers, light smokers and nonsmokers. Naturally there were many more smokers in the male group than in the female group. It was uniformly demonstrated that smokers showed the highest incidence of pulmonary complications, a total rate of 58 per cent in men for all types of operations. These figures include bronchitis, bronchopneumonia and atelectasis, but the number of patients who really showed constitutional symptoms of respiratory tract disease was, of course, much smaller, namely 9 per cent in men and 4 per cent in women. In all types of operations on the abdomen, men showed a higher incidence of complications than women, namely 41 per cent as compared to 13 per cent. Men over forty-one years of age tend to have more chest complications than the group under forty. It is felt that complications will be avoided if heavy smokers cease smoking a few days before operations. The greater sex incidence in men is explained by the man's greater reliance on diaphragmatic breathing normally than the woman's, and it is just this diaphragmatic breathing that is most interfered with following abdominal operations, especially operations on the upper abdomen. Also, the type of work usually performed by men, together with the chronic infection of the respiratory passages due to smoking are believed to contribute to their greater morbidity.—*Tobacco Smoking and Pulmonary Complications after Operation, H. J. V. Morton, Lancet, March 18, 1944, 246: 368.*—(*H. Marcus*)

Air Pollution and Respiratory Diseases.—Mills analyzed the mortality rates from pneumonia, tuberculosis and various types of cancer of the upper and lower respiratory passages in relation to the concentration of soot fall in the Cincinnati and Pittsburgh environs. Both these cities have large industrial populations in immediate proximity to the Ohio river where the soot fall is heavy and where the air is heavily polluted by carbonaceous and siliceous particles and settlements on the neighboring hills where this air pollution is much less. He found a highly significant correlation between atmospheric pollution and respiratory disease death rates in the various districts of the above two cities. The men living and working in these badly polluted districts are particularly affected, among whom respiratory disease is two to three times more prevalent than among those living in the neighboring hilltop districts where the air pollution is much less. That this difference in mortality from respiratory diseases is not due to mere socio-economic differences of these two populations is indicated by the fact that females living in the polluted air have an incidence of pneumonia and tuberculosis which is only about 50 per cent greater than females living in the hills, whereas amongst

males this difference between the two populations is about 100 per cent. In the rural districts of these two cities, on the other hand, little difference exists between the rates for males and females. Exhaust steam from power sources adds greatly to the winter smoke problem by remaining as a fog which holds flue products suspended in the air. Mills recommends the use of low volatile coal, effective trapping of the silica carrying fly-ash from chimneys, preliminary washing of high sulphur coal and the use of Diesel or electric power by railroads within metropolitan limits.—*Urban Air Pollution and Respiratory Diseases, C. A. Mills, Am. J. Hyg., March, 1943, 37: 131.—(M. B. Lurie)*

Spontaneous Pneumothorax.—Thirty-one cases of idiopathic spontaneous pneumothorax, found in the literature between the years 1935 and 1940, and 13 new and never reported cases are analyzed. The age of the patients at the time of the attacks was between fourteen and fifty years, the average being twenty-seven to twenty-nine. There were 38 males and 6 females. The right lung was affected in 18 cases, the left in 24; both lungs simultaneously in one; first the right, then the left in one. Only 15 had any chest disease in the history. Symptoms were: chest pain in 36 cases, cough in 3, dyspnoea in 26, vomiting in 6. Five patients had primarily abdominal symptoms. Occupation or strain has no significance. In 6 patients the attack occurred during sleep. Signs of pneumothorax were present in 41 cases. Other findings were: fast pulse, dyspnoea, shock, fever, cyanosis. In 16 patients there was a rise of the white blood cell count up to 36,900. Findings on X-ray examination were: displaced mediastinum in 12 cases, complete lung collapse in 2, fluid in 10, bullae in 5, adhesive bands in 2, pneumonic process in one, emphysema in soft tissue in one, fibrous change in one, old pleurisy in one, calcified lymph nodes in one. Ten patients had repeated attacks. One patient died; all the others recovered. The time of reëxpansion was a few days to two years.—*Idiopathic Spontaneous Pneumothorax, S. H. Babington, West. J. Surg., February, 1944, 52: 73.—(G. C. Leiner)*

Chronic Empyema.—An empyema is considered chronic when the size of the empyema cavity remains stationary and when the healing process becomes so slow that it is hardly noticeable. An acute empyema becomes chronic due to (*1*) bronchopleural fistula, (*2*) inadequate drainage, (*3*) tuberculosis, (*4*) too late draining, (*5*) bronchiectases. Surgical procedures are: (*1*) establishment of adequate drainage; (*2*) decortication of the lung; (*3*) thoracoplasty; (*4*) Schede operation, which is the ideal operation in chronic nontuberculous empyema. Tuberculous empyema is a complication in about 10 per cent of pneumothorax cases. If a tuberculous empyema does not improve under treatment with aspirations and irrigations it is supposed to be due to the underlying lung disease and this has to be treated; thoracoplasty should be done, if the other lung is not affected and if the general condition of the patient is good. In mixed infection empyema immediate surgical drainage by thoracotomy is indicated. As soon as the patient's condition permits, thoracoplasty should be performed.—*Traitement des pleurésies purulentes chroniques, J. P. Roger & J. M. Lemieux, Laval méd., February, 1944, 9: 70.—(G. C. Leiner)*

Outlining of Empyemal Walls.—By spraying only 10 cc. of 35 per cent diotrast solution into open empyemal spaces, the pleural walls are clearly outlined in the X-rays. The method of course cannot be used for noncommunicating or incompletely drained loculations inaccessible to the spray. (Skiodan in acacia solution has also been used but must be kept warm to prevent plugging in the atomizer.) To remove the loose coagulum (which takes up the contrast medium and obscures results) the empyemal space should be thoroughly irrigated with saline or azochloramide solution. The patient then lies with

affected side uppermost and the spray is used, care being taken not to obstruct the exit, to allow free egress of air, to avoid pressure within the chest cavity. The patient is then tilted toward the side of the wound and excess fluid is drained off. Hard X-ray films (postero-anterior and lateral) are taken immediately. As the contrast medium is rapidly absorbed it does not cause confusion in subsequent X-rays. The method is inexpensive and effective.—*Roentgenographic Demonstration by Diotrast of the Pleural Walls in Open Empyema, J. Gordan, J. Thoracic Surg., April, 1944, 13: 162.*—(*W. M. G. Jones*)

Mediastinal Pleurisy in Infants.—Pleurisy involving the anterior portion of the superior mediastinum produces a roentgen picture similar to but differing from that produced by an enlarged thymus. Other conditions with which mediastinal pleurisy may be confused are partial atelectasis of the lung, pneumonic infiltration, stasis in the superior vena cava by pressure from an elevated bronchus, enlarged hilar nodes, infections of the thymus gland, tumors of the thymus gland, dilated left auricle, retrocardinal aneurysm, paravertebral abscess, spondylitis deformans, oesophageal diverticulum, dilated oesophagus, scoliosis, pericardial fat tab, ganglioneuroma of the vagus nerve, and tumor of the pericardium. A case of unilateral thymus gland enlargement is described for comparison with 8 cases of mediastinal pleurisy in patients under one year of age. Although only one of the cases was autopsied, they all closely resemble proved cases presented by other authors. Clinically there is no single symptom or group of symptoms that would permit a definite diagnosis of mediastinal pleurisy even with effusion, without roentgen examination of the chest. Cough is the most common symptom, occurring in 6 of the author's 8 cases. Usually the cases are pneumonic in origin, frequently showing recurrences of pneumonic infection, and some cases being more specifically designated as "pleuropneumonia." Physical findings are usually related to the pneumonia rather than to the pleurisy or effusion. In only one case was widening of the mediastinum detected by percussion prior to roentgen examination. The course is relatively benign as evidenced by the low mortality. Two deaths in the series were related to complicating factors (heart disease and mongolian idiocy). Treatment has been symptomatic except for the pneumonic recurrences which were treated with sulfonamides. Diagnostic or therapeutic aspiration of fluid was not attempted. Roentgen therapy directed to the anterior mediastinum in 2 cases did not shorten the course of the process. Of all the infections involving the anterior mediastinal nodes, tuberculosis is apparently rare. Roentgen recognition of this form of pleurisy is important but the criteria which are used to distinguish it from unilateral thymus gland enlargement are not generally known. This form of mediastinal pleurisy, with or without effusion, is characterized by: (*1*) a sharp lateral margin; (*2*) termination in an inferior angle of less than 90 degrees and in relation with or near the interlobar fissure; (*3*) greater frequency of unilateral involvement, more often on the right side; (*4*) frequent inflammatory changes in the adjacent lung parenchyma; (*5*) increase in the width and density of the interlobar fissure shadow; (*6*) occurrence of greatest density inferiorly in the lateral projection; (*7*) occurrence of the density anywhere between the anterior and posterior boundaries of the pleural space in the lateral projection; (*8*) absence of tracheal deviation or distortion in the lateral projections (persistent lateral deviation to the affected side in the postero-anterior view occurred in 2 cases); (*9*) minimal changes in the size and contour of the density during quiet or labored respiration; (*10*) no significant reduction in size after small doses of roentgen therapy. In contrast to the preceding criteria, significant thymus gland enlargement is characterized by: (*1*) a larger shadow which overlaps part of the cardiac shadow; (*2*) rounded corners, usually 90 degrees or more; (*3*) considerable change in contour with respiration and crying; (*4*) bilateral mediastinal enlargement, although asymmetries and un-

ilateral forms are well known; (*5*) variable degrees of tracheal and oesophageal deviation or compression in one or both planes (this point is still widely disputed in the literature); (*6*) occurrence of the density anteriorly and superiorly in lateral projections; (*7*) decrease in size after small doses of roentgen therapy. It is possible to have both pleurisy and thymus gland enlargement simultaneously. Improvement in symptoms following a roentgen treatment without much reduction in the angular shadow is possible in that thymus tissue present and obscured by the pleural density could be reduced so as to allow shift or redistribution of any fluid present. Occasional reports of roentgen resistant thymus glands should be checked for possible misinterpretation of the findings. The greatest source of error arises from poor positioning or alignment in roentgenography. Slight rotation of the patient may completely obscure portions of the mediastinal border. Low positioning of the tube accentuates these angular deformities and in 2 of these cases the residual thickened pleura cast a solid triangular shadow from this angle. Correct alignment in these same cases showed only linear shadows representing thickened pleura in the central interlobar fissure area. This thickening was a residual characteristic of all the cases which cleared of their major density during the period of observation.—*Mediastinal Pleurisy in Infants, R. A. Harvey, Am. J. Roentgenol., February, 1943, 49: 145.*—(*W. H. Merrit*)

Widened Mediastinum in Children.—The authors found that a number of infants and children were hospitalized for periods as long as one to three years solely because of roentgenographic evidences of "widened mediastinum" or "enlarged" mediastinal and tracheobronchial lymph nodes. During this period the children had been roentgenographed in the horizontal position, a practice which is still prevalent in most institutions. Since the institution of upright chest roentgenography, a considerable number of children have been discharged because of the sudden restitution of the mediastinal shadow to the normal. This change occurred solely because of improved technique of roentgen examination. The difference in results with upright and horizontal chest roentgenography was compared and analyzed in 25 cases. Ten of these cases were selected for special study to determine the effects of phase of respiration, position (upright or horizontal) and type of projection (anteroposterior and postero-anterior). It was almost invariably found that the roentgenograms made in the postero-anterior upright position at the end of inspiration were the most satisfactory and gave the least distorted and least misleading views of the heart and mediastinum. If, in addition, a method of synchronizing the exposure with the same phase of the cardiac cycle is employed, successive roentgenograms on different days are absolutely comparable, particularly in regard to heart size and shape. Changes in the size and appearance of the mediastinal and heart shadows on the roentgenogram may be produced by various factors among which the most important are position (whether horizontal or upright), effect of gravity, phase of respiration and phase of the cardiac cycle. The changes so produced are important, since serious mistakes in diagnosis such as hypertrophied thymus, childhood tuberculosis, congenital or acquired valvular heart disease and bronchopneumonia have been made in normal cases. These mistakes are easily made unless one understands the effect of the various factors producing the alteration in the roentgenogram. Great variation in the size of the mediastinum has long been recognized and ascribed to change in position. In the cadaver, Cunningham states that, owing to the weight of the heart, the anterior mediastinum is increased and the posterior mediastinum is reduced in the anteroposterior depth. From this it can be inferred that the mediastinal structures can move in anteroposterior direction because of available space and force of gravity. In the supine position the mediastinal structures tend to drop posteriorly. Because of the vertebrae there is no yielding space posteriorly

and, as a result, the structures spread laterally, pushing the lungs before them. The amount of lateral displacement is appreciable as the roentgenograms demonstrate. In the prone position, the mediastinum structures move anteriorly. Again, the mediastinal structures tend to spread laterally, but owing to the soft compressible fibro-alveolar tissue and the space in the anterior mediastinum it more nearly approaches the sternum and the lateral displacement is minimal. Thus it may be stated that in the horizontal position, the postero-anterior (prone) view will produce a narrower mediastinal shadow than the antero-posterior (supine) view. This is also due to another important factor which holds true for both the horizontal and upright positions, namely that the trachea, lymph nodes, heart and vessels all lie closer to the anterior surface of the body than the posterior. Another important rôle in increasing the width of the mediastinal shadow in the horizontal position can be ascribed to the abdominal organs. These tend to push up the diaphragm, thus shortening the vertical diameter of the thorax and causing lateral expansion of the mediastinal structures. Again, in the horizontal position widening is added to by distention of the superior vena cava and innominate vein on the right and the subclavian vessels on the left. In the upright position, the blood vessels empty, the abdominal viscera drop and the mediastinum tends to recede inferiorly. In doing so, the lateral displacement is minimized and the mediastinal shadow is correspondingly narrowed. Groedel and Dietlen believe that narrowing of the mediastinum during inspiration and widening during expiration are due to the changing position of the diaphragm. Dietlen admits a widening in early inspiration due to sudden filling of superior vena cava and right auricle as the result of suction effect. The crying effort also influences the size of the heart and mediastinum. During the forced expiration incidental to the crying effort (Valsalva effect) the narrowed glottic chink offers a decided resistance to the column of air. As a result the intrapulmonary pressure is raised and the heart swings on its long axis, the apex coming forward and the base backward. Its narrower diameter is therefore presented; the projected area is lessened for the greater part of this phase and is only broad for a moment, at the extreme end of expiration. Thus in the crying child the transverse cardiac diameter is less than at inspiration, even though the chest has narrowed and the diaphragm has risen. Marked changes in the size of the heart are due to changes in the phase of the cardiac cycle. The size and shape of the heart should be judged only in comparison with previous or subsequent teleroentgenograms made in the upright postero-anterior position, in inspiration, and using short exposures (one-tenth second or less). If, in addition, means are available to synchronize the exposure with a particular phase of the cardiac cycle, the likelihood of error is reduced to a minimum. The writers agree with Pancoast that "unless there are clinical evidences and lateral X-rays of the neck to show definite buckling of the trachea, it is impossible to make a diagnosis of enlarged thymus." To this can be added that no such diagnosis should be based solely on horizontal roentgenograms. A simple inexpensive device can be made to provide upright chest roentgenograms; the authors describe one of their own.—*Study of the "Widened" Mediastinum in Children and Pitfalls in Diagnosis, A. V. Shapiro & L. Bell, Am. J. Roentgenol., February, 1943, 49: 159.*—*(W. H. Merrit)*

Diaphragmatic Hernia.—There are two main forms of diaphragmatic hernia: nontraumatic and traumatic. The congenital variety of nontraumatic hernia is attributable to embryologic deficiency and usually does not have a hernial sac. The more common sites of a congenital hernia present at birth in the probable order of frequency of occurrence are: (*1*) through the pleuroperitoneal hiatus (foramen of Bochdalek); (*2*) through the oesophageal hiatus; (*3*) through an anterior substernal opening (foramen of Morgagni or Larrey's spaces); and (*4*) through the gap left by partial absence of the diaphragm, a gap which is usually situated in

the posterior part of the muscle. If the hernia is acquired after birth, the sites of occurrence are: (*1*) through the oesophageal hiatus (this type has a hernial sac); (*2*) through the region of fusion of the anlage of the diaphragm; and (*3*) at sites named under the congenital type. Traumatic hernia may be caused by direct or indirect injury, or by inflammatory necrosis of the diaphragm. Of 295 cases in which surgical treatment was employed, the most common types were oesophageal hiatus hernia, pleuroperitoneal hiatus hernia, hernia attributable to congenital absence of the posterior portion of the diaphragm, subcostosternal hernia and traumatic hernias caused by direct or indirect injury and those caused by inflammatory necrosis. Oesophageal hiatus hernia, the most common variety in adults, is a sliding herniation of the stomach into the posterior mediastinum. The hernia may progress until the entire stomach is contained within the hernial sac; the colon, omentum, and occasionally the spleen also may be drawn into the sac. True oesophageal hiatus hernias can be classed into two types: In the first type the oesophagus is of normal length and its lower end is not elevated above the diaphragm, but a portion of the stomach has herniated into the posterior mediastinum, beside the oesophagus. This type of hernia is often designated as para-oesophageal hiatus hernia. The hernias are usually small to moderate in size and rarely involve more than a fourth to a half of the cardiac end of the stomach. About a third of the oesophageal hernias were of this type. In the second type of oesophageal hiatus hernia, the oesophagus is of normal length but its lower end is elevated above the diaphragm, and the herniated stomach is in the posterior mediastinum. The size of the hernias is usually larger than that of the first type. From a third of the stomach to the whole stomach, a portion of the omentum and occasionally a portion of the colon are within the hernial sac. These hernias usually fill the entire mediastinum and generally project into the left side of the thoracic cavity but may project into the right side or both sides. Hernias of this type constitute two-thirds operated upon by the writer. Hernias of the first type may ultimately develop into those of the second type as more of the stomach is included in the hernial sac. In many cases the lower end of the oesophagus is dilated. Two additional types of oesophageal hiatus hernia, which may be considered pulsion varieties, have also been recognized. These hernias are probably attributable to atrophy of the elastic fibres of the diaphragmatico-oesophageal membrane together with relaxation of the circular muscle surrounding the oesophageal opening, with a resultant incompetent hiatus. The establishment of the diagnosis usually requires both oesophagoscopy and roentgenography. One type closely simulates the para-oesophageal type of hernia, except that it is relatively small. A definite hernial sac is beginning to form. The oesophagus is only slightly elevated; the abdominal portion is elevated to the superior border of the diaphragm. The hernia may remain small or develop into a true para-oesophageal hernia. In the other type, the entire hiatus is incompetent, the cardiac end of the stomach protrudes above the diaphragm and there is comparable elevation of the oesophagus. This type does not have a true hernial sac and may not be considered a true hernia. Oesophagoscopy shows the length of the stomach to be normal, differentiating it from a congenital short oesophagus. Congenital short oesophagus with partial thoracic stomach is not a true hernia because the shortness of the oesophagus has kept the stomach suspended above the diaphragm. This condition is relatively rarely found at operation. The condition of short oesophagus includes that in which the oesophagus is congenitally short and that in which ulceration and occasionally malignant neoplasm is followed by cicatricial contraction of the lower end of the oesophagus and drawing of the gastric cardia above the diaphragm. Dilatation of the lower end of the oesophagus with relaxation of the cardia of the stomach simulates oesophageal hiatus hernia of the pulsion type. Oesophagoscopic biopsy of the mucosa at the site of the dilatation is necessary to establish the diagnosis.

The position of the left kidney may be helpful in distinguishing between the pleuroperitoneal hiatus (Bochdalek foramen) type of hernia and that resulting from the absence of the posterior portion of the diaphragm; in the former, the kidney is in the normal position; in the latter it is usually above the normal diaphragm in the lower part of the thorax. These hernias do not have a hernial sac; they produce marked or complete collapse of the left lung and often marked shift of the mediastinum to the right. Operation should be performed for these congenital types of hernia as soon after birth as the condition is recognized. The subcostosternal type (foramen of Morgagni) of hernia is usually unilateral and on the right side. When the colon is herniated, the roentgenological diagnosis is readily established. When the omentum is the only abdominal structure in the hernia, the appearance may simulate neoplasm. In some instances an elevated position of the colon may be suggestive. The traumatic type of hernia occurs most frequently on the left side, usually in the posterolateral portion and dome of the diaphragmatic muscle. Hernias due to inflammatory necrosis of the diaphragm, following rupture of a subphrenic abscess on the left side, are included in the traumatic variety. There is no hernial sac. Roentgenograms of the chest are made and read immediately after all operations. Mediastinal displacement due to pneumothorax is corrected by withdrawal of sufficient air. Pulmonary congestion due to retained or aspirated secretions is best relieved by immediate bronchoscopic aspiration of the lung. In the series of 295 operated cases there were 12 deaths, a mortality of 4 per cent.—*Roentgenologic Considerations of the Diagnosis and Treatment of Diaphragmatic Hernia, S. W. Harrington, Am. J. Roentgenol., February, 1943, 49: 185.* —*(W. H. Merrit)*

Signal Node in Cancer.—The deep inferior cervical nodes are of special importance in the subject of metastatic cancer. These nodes may be primarily involved by cancer of the head and neck, but the relative frequency of involvement in thoracic and intraäbdominal cancers has directed early attention to their special position, notably Virchow's and Troisier's. They are closely associated with the important lymphatic collecting channels, the great lymphatic vein on the right, and the thoracic duct on the left. The nodes are connected to the channels by the efferent lymphatics, and ordinarily the flow of lymph is from the node into the ducts. Under pathological conditions the flow may become reversed and cancerous invasion follows. Lymphatic metastasis to distant organs may occur by way of emboli or by direct propagation through the lymph channels. In either case the orifice of the duct near the jugular vein becomes occluded, and the direction of the lymph current is reversed. The invasion of the supraclavicular nodes from abdominal or thoracic cancers is, therefore, always retrograde. The "sentinel" node is invaded most frequently by thoracic cancers, but during the course of their evolution many abdominal cancers metastasize there. The finding of such metastasis generally denotes a poor prognosis although it is possible to prolong life by eradication of the primary cancer and radiation to the metastatic nodes. Frequently the presence of a hard tumor mass in this location is the first indication of malignancy somewhere in the body, and only prolonged diagnostic search leads to the discovery of the primary source. At other times the primary location is demonstrated at autopsy only. In the majority of patients the signal node is invaded only in the advanced stages of the disease. Among 4,365 patients studied, 122, or 2.8 per cent, presented metastasis to the signal node in thoracic or abdominal cancers. In 41 of these it was the first sign of malignancy. In primary carcinoma of the lung the signal node was involved in 13.2 per cent of the cases. Next in order of frequency, carcinoma of the pancreas involved the node in 8.1 per cent, oesophagus 7.1 per cent, ovary 6.1 per cent, testis 4.8 per cent. Although involvement of the node in carcinoma of the stomach is found only in 2.6 per cent, this was a frequent cause because of the high incidence of this type of carcinoma. Intraäbdominal carcinomata usually metas-

tasize to the left node, whereas thoracic tumors affect both sides almost equally.—*Significance of Supraclavicular Signal Node in Patients with Abdominal and Thoracic Cancer, E. Viacava & G. Pack, Arch. Surg., February, 1944, 48: 109.*—(*H. Marcus*)

Solitary Lung Tumors.—During the past ten years, 23 patients with a solitary circumscribed opacity in the lung measuring at least 2 inches in diameter were seen. The most common symptoms were weight loss (in 12 patients), cough (in 10), chest pain (in 10). Six patients had no obvious complaints; physical findings were absent in about half of the patients. The final diagnoses were: primary malignant tumors in 14 cases, metastatic malignant tumors in 3 cases, benign lung tumor in one case, tuberculomata (with negative sputa on cultures) in 4 cases, chronic lung abscess in one case. Bronchoscopy, which was done in 14 patients, gave a positive biopsy in only two. Four patients were diagnosed on the basis of clinical characteristics. In 7 patients the diagnosis was made at autopsy. Exploratory thoracotomy, which is recommended as an early diagnostic aid, led to the diagnosis in 10 cases.—*Solitary Circumscribed Tumors of the Lung, T. F. Thornton, Jr., W. E. Adams & R. C. Bloch, Surg., Gynec. & Obst., April, 1944, 78: 364.*—(*G. C. Leiner*)

Pulmonary Mucous Epithelial Hyperplasia.—Two cases of this condition are described. In both, the disease picture was somewhat obscured by severe superimposed bacterial infections. On X-ray films the first case showed many homogeneous shadows on both sides, more pronounced at the bases, interpreted as a possible fungus infection or a tumor. Severe dyspnoea preceded death. The patient, a male, was sixty-two years old. The lungs showed the only pathological changes of note. These consisted of a dilatation of the alveoli and a covering of the alveolar walls by a simple columnar epithelium. In a few cases this epithelium showed a transition to a cuboidal type, but as a rule the change from the abnormal epithelium to the usual type was abrupt, as if the alveoli were being invaded by the pathological cells. In some areas the columnar epithelium had formed small papillary processes. The columnar cells were not ciliated and no mitoses were noted. No abnormal cells were found in the lymphatic tissues of the lungs. The bronchiolar epithelium, and that of the alveolar ducts, did not seem to be affected by this process. The second case was that of a white female, seventy-nine years of age, who had long suffered from what was diagnosed as primary anaemia. The patient died with symptoms of pneumonia. On necropsy the lung sections showed certain microscopical changes which were of interest. Although most sections showed merely a confluent bronchopneumonia, in the left lower lobe, in the lingula of the left upper lobe, and in a small portion of the right upper lobe, a condition was found similar to that observed in case one, except that the columnar epithelial cells were proportionately higher so that they almost obliterated the lumen of the alveoli in some areas. The left lower lobe had been almost completely replaced by hyalinized collagenous fibrous tissue but it contained islands of abnormal epithelial lining. The bronchi and bronchioles, as in case one, were unaffected. The pathological findings in these two cases have much in common with those rare tumors (pulmonary adenomatosis) described by Helly, Bonne and others. As a similar condition, recognized as a virus disease, is known to occur in sheep (jaagsiekte) the authors consider the possibility of a viral aetiology in this disease. This condition, however, is of little significance in a consideration of the genesis of pulmonary carcinoma in general. (With 4 plates.)—*Pulmonary Mucous Epithelial Hyperplasia (Pulmonary Adenomatosis): A Report of Two Cases, E. B. Taft & D. A. Nickerson, Am. J. Path., March, 1944, 20: 395.*—(*J. S. Woolley*)

Hyperplasia of Pulmonary Alveolar Epithelium.—In the early part of fetal life the lung has a glandular appearance and the alveoli are lined by a continuous epithelial layer. But in the latter part of the intra-

uterine period the capillary bed develops extensively, and numerous capillaries break through the epithelial lining, leaving the epithelium as isolated round cells. In the postnatal lung the alveolar walls are formed almost entirely by the capillaries, but a few epithelial cells persist in the niches between the capillaries. In any disease which brings about marked thickening of the interalveolar septa, with displacement of the capillaries away from the surface and consequent loss of repiratory function, the alveolar epithelium may undergo hyperplasia to form a continuous epithelial lining. The cells are either cubical or columnar and some of them may secrete mucin. There is convincing evidence that the epithelium forms locally and does not grow in from the bronchi. In chronic passive congestion and in interstitial pneumonia, epithelialization of the alveoli follows thickening of the interalveolar septa. Mild irritation of the alveolar walls from foreign bodies may also bring about epithelialization, as in lipoid pneumonia. In *jaagsiekte* of sheep widespread epithelialization of the alveoli occurs. *Jaagsiekte* is a serious endemic infectious disease in sheep prevalent in South Africa. A similar disease in sheep in Iceland has been described. The aetiology of this disease is unknown but the microscopical features suggest direct irritation of the cells by a virus which attacks them. In 1939 Bonne described a case of diffuse epithelialization of the pulmonary alveoli in a thirty year old Chinese male. This case strikingly resembled *jaagsiekte* in sheep. A similar case is reported by the present author. The patient, a sixty-three year old male, complained of dyspnoea on exertion, a productive cough, weakness and loss of weight. On introduction of lipiodol the small bronchi showed unusual narrowing. The tentative clinical diagnosis was carcinoma of the lung. Death ensued a few months later and microscopical examination of the lungs showed every alveolus lined by cubical or columnar epithelium, much as in the case reported by Bonne. The septa were not destroyed by epithelial invasion as one would expect if the growth were carcinoma. The lesion was not an interstitial pneumonia and the epithelialization was not found due to thickening of the septa or to foreign material in the alveoli. Human pulmonary tumors reported as multiple adenoma or carcinoma have a microscopical structure similar to this case and the case of Bonne. The alveoli are lined by epithelial cells and the interalveolar septa are intact. In a few instances metastases have been found There is no good reason to doubt that hyperplasia of the alveolar epithelium may give rise to localized or diffuse adenomatous growths which may form metastases. (With 2 plates.)—*Hyperplasia of the Pulmonary Alveolar Epithelium in Disease, E. T. Bell, Am. J. Path., November, 1943, 19: 901.*—(*J. S. Woolley*)

Mediastinal Ganglioneuroma.—These comparatively rare neurogenic tumors arise in the posterior mediastinum. It is important to diagnose them correctly as their prognosis is good. The cure lies in surgical removal. The approach is posterior. If the tumor is small, an intercostal incision is sufficient. Otherwise parts of one or two ribs may be excised. At times incomplete removal is all that can be accomplished because of adherence of the tumor to surrounding structures, especially the vertebral spine. Even so, recurrence need not be feared. The history usually is of long duration. Symptoms are due to pressure of the tumor on surrounding structures, notably the trachea and bronchi, the inferior laryngeal nerve, or the superior cervical sympathetic ganglion. The tumor may be small and symptomless, and in such cases it is usually discovered on routine X-ray examination. Any patient with a posterior mediastinal tumor who appears to be in good condition should be suspected of a ganglioneuroma. Pathologically, the tumor is well encapsulated, and it contains fibrous tissue with nerve elements, such as ganglion cells and satellite cells. At operation the entire sympathetic chain should be examined carefully since multiple tumors are occasionally found. —*Mediastinal Ganglioneuroma, H. K. Gray, D. V. Shepard & M. B. Dockerty, Arch. Surg., March, 1944, 48: 208.*—(*H. Marcus*)

Aspiration Biopsy of Intrathoracic Neuroblastoma.—This is a case report of a five-month-old infant who offered a puzzling symptomatology and was finally diagnosed by aspiration biopsy under fluoroscopic guidance. At the age of three months, the child developed hyperpyrexia, restlessness and profuse perspiration. At the time of hospitalization he was dyspnoeic and pallid, the liver was enlarged and the abdomen distended. Flatness and suppressed breath sounds were present over the right lower lobe. X-ray revealed a sharply circumscribed rounded density, 6 cm. in diameter, at the right base posteriorly; subcutaneous diodrast films showed what was thought to be a soft tissue mass at the superior pole of the right kidney. Biopsy specimen under fluoroscopic control suggested tumor and a tentative diagnosis of neurocytoma of the adrenal was made; the thoracic mass, it was believed, was due to extension upward—either directly or by liver metastasis. Operation by abdominal approach showed the mass to be entirely supradiaphragmatic. The pleural cavity was therefore entered and the mass removed, leaving some tumor tissue behind with the pedicle, which was attached to the bodies of the lower dorsal vertebrae. The patient succumbed three and one-half hours postoperatively. At autopsy the abdomen was normal, except for an enlarged liver. The right lung was collapsed and the right retropleural ganglion chain involved. The pathological diagnosis of the tumor was neurocytoma (atypical). Neuroblastomata occur wherever sympathetic nervous tissue is present; the usual site is the abdomen. Of the retropleural tumors, a dense rounded shadow in the posterior portion of the chest is of diagnostic importance. Since the symptomatology depends upon signs of pressure or metastasis, which may be absent, and since intrathoracic involvement may be mistaken for other types of pulmonary lesions, aspiration biopsy under fluoroscopic guidance would seem to be a logical procedure in some cases.—*Intrathoracic Neuroblastoma, W. E. Lee & J. A. Ritter, Ann. Surg., June, 1943, 117: 98.*—(*D. J. Rednor*)

Endothelioma of Pleura.—Primitive endotheliomata of the pleura are rare tumors. Among 10,000 tumors of all types only one is seen. The first sign of the presence of the tumor is a pleural effusion. On aspiration this contains varying amounts of blood, usually microscopical amounts at first, but it later may become haemorrhagic. Examination of the fluid shows typical tumor cells. The cells are frequently multinucleated, with dark nuclei, and show many mitoses. The underlying lung is atelectatic. People in middle age are usually affected, without a sex preference. The case reported in this communication showed symptoms for sixteen months prior to death. The outstanding complaint was dyspnoea. The effusion was massive and tended to accumulate rapidly after removal. In all, 66 liters of fluid were removed during the course of the illness. Although autopsy was not performed, the tumor was easily demonstrated by thoracoscopy. It was diffusely distributed over the pleura. Healthy pleura alternated with necrotic patches, and in other areas the tumor was present as papillomatous or solid structures. Whether this tumor arises from the pleural endothelium as such or from the blood vessels or lymph channels within the pleura remains undecided.—*Un cas d'endothéliome primitif de la plèvre, J. Stephani & A. Besse, Schweiz. med. Wchnschr., December 31, 1943, 73: 1580.*—(*H. Marcus*)

Mediastinal Lymphosarcoma.—A thirty-nine year old woman developed chest pain, cough and loss of weight in 1930. In 1932, when the complaints had become worse and anorexia, difficulty in swallowing and swelling in the right side of the neck had appeared, the physical examination showed masses of firm lymph nodes on both sides of the neck; the roentgenological examination of the chest revealed a large well defined, rounded, homogeneous shadow filling the upper two-thirds of the right lung field with its base in the mediastinum. The diagnosis of mediastinal neoplasm was made. Deep roentgen therapy was administered, which was followed by regression of the tumor masses. The treatment

was repeated several times during the following years. Because of attacks of dyspnoea the patient was admitted to Morissania Hospital in 1942. X-ray examination showed a large, irregular, oval calcified mass to the right of the heart. An operation was performed and a large, lobulated, hard mass was found behind the heart. The mass was densely adherent and could not be removed. The patient died soon after the operation. The clinical course and the marked regression of the neoplasm under roentgen therapy are supposed to be strongly indicative of a malignant lymphosarcoma.—*Mediastinal Lymphosarcoma: Report of a Case under Roentgen Therapy for More than Ten Years, E. B. Bilchick & A. W. Jacobs, New York State J. Med., April 1, 1944, 44: 731.*—(*G. C. Leiner*)

Mediastinal Dermoid.—To date, 229 cases of mediastinal dermoids and teratomata have been published. The tumors are classified as simple dermoid cysts, complex dermoid cysts and teratomata. Simple cysts are lined with epithelium and their wall contains hair follicles, sweat and sebaceous glands. They are filled with thick sebaceous material. Complex dermoid cysts contain the same type of material, but there are outpouchings from the cyst wall into the lumen which are lined by epithelium. In the depth of these, mesodermal elements, such as bone, cartilage, smooth and striated muscle, are found. Teratomata have elements of all three germ layers. They are classified as adult or embryonal. The latter type is prone to degeneration into malignant tumors which show a mixed sarcomatous and cancerous character. If the tumors are not malignant, they produce their symptoms by pressure on the important thoracic structures, interfering with respiration and circulation. Radical surgical removal is the only rational therapy. The origin of these tumors is in doubt. The theory that they represent a homologous twin which was taken up into the body of its twin at an early age has been abandoned. The chief argument against this theory is that even the most highly differentiated teratomata fail to show a meta[meric] arrangement as is the case with the mo[st] primitive examples of malformed twins. Th[e] more modern conception is that teratomat[a] originate from the omnipotent tissue of th[e] blastopore and as the embryo develops ar[e] included in it. Whether the same theor[y] applies to dermoids is not known at this time. A case of mediastinal dermoid is presented i[n] this article. The large tumor collapsed th[e] right lung and was so firmly adherent to th[e] right heart from base to apex that no peri[-] cardium could be made out grossly. Th[e] wall of the tumor, on microscopical examina[-] tion, fused with the pericardium and with th[e] myocardium. The latter showed inflam[-] matory and degenerative changes underlying the tumor. In this case, as in 2 other case[s] reported in the literature, the question arise[s] whether the tumor secondarily became fuse[d] with the pericardium through inflammatory changes, or whether it originated in the peri[-] cardium.—*Mediastinaldermoid, A. Zingg, Schweiz. med. Wchnschr., November 27, 194[3], 73: 1440.*—(*H. Marcus*)

Hodgkin's Disease.—The authors classify Hodgkin's disease into three types—paragranuloma, granuloma and sarcoma. The paragranuloma type is the most benign form both histologically and clinically. In almost all cases this type of Hodgkin's disease begins in the cervical lymph nodes and its behavior suggests an infectious process rather than a true tumor. The granulomatous form of the disease also suggests an inflammatory origin whereas the sarcomatous type has all the characteristics of a true neoplasm. In the authors' conception of disease, the paragranulomatous and granulomatous forms have a common aetiology, the latter representing a more virulent exciting agent or a less immune host. Bacteriological studies of excised lymph nodes taken from persons sick with Hodgkin's disease failed to yield positive significant results and the authors are forced to conclude that the aetiology of this disease has yet to be discovered. Investigation further indicated that Hodgkin's granuloma ac-

counts for approximately 0.25 per cent of deaths in a general hospital. The paragranulomatous and granulomatous forms occur at all ages, although they appear to be more uncommon in infancy and in extreme old age, and are more common in males than in females (70:30). The sarcomatous form differs in that it occurs chiefly in the middle-aged or elderly, 80 per cent occurring over the age of forty in the authors' series of 51 cases, and the sex distribution was equal. A patient may begin with the more benign paragranulomatous type and with time the disease may be transformed to the granulomatous and later sarcomatous types but never the reverse.—*Hodgkin's Disease, H. Jackson & F. Parker, Jr., New England J. Med., January 6, 1944, 230: 81.*—(*J. Ballinger*)

Osteomyelitis of Thoracic Spine.—The authors present a case of pyogenic osteomyelitis of the thoracic spine presenting as a case of primary pulmonary disease. From the onset throughout seven months of hospitalization the clinical findings suggested a tentative diagnosis of inflammatory disease of the lungs. The constant manifestations were pain in the chest, profuse expectoration, frequent and severe haemoptysis, dyspnoea and sepsis. Roentgenographic examination supported such an opinion since vertebral abnormalities were not seen until late in the course. The early roentgenographic changes were related only to the pulmonary lesions; a diffuse density was present in the lower part of the left upper lobe; evidence of mediastinitis was not noted. Because of the profuse purulent expectoration, haemoptysis and suggestive roentgen findings, bronchiectasis could be inferred. In the absence of other causes, the possibility of an infected bronchial ectasia resulting from a previously expelled foreign body necessitated consideration. Bronchography and repeated bronchoscopies were therefore performed. Tuberculosis and other specific infections of the lung or bronchus were excluded by roentgen examinations, bronchoscopic and sputum studies. Evidence for abscess or necrosis of the lung was likewise lacking. Mediastinitis on the right side became definitely apparent on the chest roentgenograms five months after onset of illness. However, because of the extensive opacity in the left lung field it was not considered likely that all of the chest involvement could arise from a vertebral osteomyelitis. Such a view was apparently supported when roentgenograms of the dorsal spine made at about the same time were described as showing no evidence of disease. As the mediastinal abscess enlarged the nodular outline of the widened root shadow grew large, lost its sharp delineation from the surrounding lung tissue and suggested the diagnosis of mediastinal lymphoma. The presence of a palpable spleen appeared to confirm this diagnosis, and the destructive vertebral changes which appeared were ascribed to bony extension of the lymphoma. Deep roentgen therapy of the abscess which was mistaken for lymphoma was soon followed by pointing of the mediastinal suppuration with paravertebral abscess formation and accentuation of the septic state. Bilateral brachial plexus nerve root signs due to pressure associated with the diseased vertebrae, and indicated by weakness of the arms and atrophy of the small muscles of the hand, developed late. However, a noteworthy manifestation of vertebral involvement which was present from the onset was the fixed, supine position which the patient constantly assumed. Roentgen evidence of osteomyelitis with destruction of the dorsal vertebrae finally became apparent seven months after the onset of symptoms, concomitantly with the superficial pointing of the abscess. By this time the vertebrae were completely riddled with the pyogenic infection and the disease had become far advanced. At autopsy the destruction of the dorsal vertebrae by pyogenic osteomyelitis was very extensive, and the other changes were essentially those of suppurative mediastinitis. No gross bleeding areas in the bronchi were found to explain the severe and frequent haemoptyses which were apparently due to congestive changes.—*Pyogenic Osteomyelitis of the Thoracic Spine Presenting as Primary Pulmonary Disease,*

H. A. Solomon & A. L. Bachman, Am. J. Roentgenol., February, 1943, 49: 219.—(W. H. Merril)

Lupus Erythematosus Tumidus.—Tumor forms of lupus erythematosus are rare variants of the discoid type. They may be located either superficially or deep, the former in the cutis and the latter in the subcutis. There is both direct and circumstantial evidence of the tuberculous origin of these tumors. If lupus erythematosus of the discoid type itself may result from a tuberculous infection, there is no reason why its variant may not develop on the same aetiological basis. Furthermore, a case of lupus erythematosus tumidus has been reported in the literature whose suspected tuberculous origin was confirmed by guinea pig inoculation. In the author's case of this skin disease the lesion remained unchecked for three years. Yet, one week after the first intracutaneous injection of tuberculin, retrogressive changes were obvious. Furthermore, the display of a high allergy to tuberculin, repeated focal reactions following excessive dosage and the unquestioned favorable therapeutic response were further indications of the tuberculous nature of the disease. In the present case prolonged intracutaneous tuberculin therapy proved efficacious. About 10 per cent of the original tumor remained after fourteen and one-half months' treatment. (Illustrated.)—*Lupus Erythematosus Tumidus Superficialis, Treatment with Tuberculin: Report of a Case, S. Irgang, Arch. Dermat. & Syph., July, 1943, 48: 60.—(J. S. Woolley)*

Amyloidosis and Major Surgery.—Recovery from amyloidosis is said to be rare, and the disease usually progressive and fatal. In the case reported here four stages of thoracoplasty were done for a large chronic empyema, and seven months later an extensive Schede thoracoplasty was necessary to obliterate the residual paravertebral sinus which extended from the eighth rib to the apex. The patient stood his surgery extremely well and is working today, four years later. At onset, two years before surgery, the amyloidosis was quite extreme, the liver edge at the iliac crest, urine specific gravity 1005 to 1010, albumin 4 plus, non-protein nitrogen 30 to 40 mg. per cent, congo red retention 80 to 97 per cent, and blood red cells 2,200,000. The patient suffered greatly from persistent nausea and vomiting, body wasting, haemorrhages from mucous membranes and chest wound. He was kept alive with intravenous fluids and transfusions, high vitamin, high protein diet with liver and iron added. After a year the liver had reduced in size but at time of surgery was still at the unbilicus level. Other tests changed little though the anaemia improved and weight increased. His endurance and recovery under surgery are considered remarkable.—*Major Surgery in Amyloidosis, J. M. Beardsley, J. Thoracic Surg., August, 1943, 12: 590.—(W. M. G. Jones)*

Pulmonary Oedema.—Oedema of the lungs is a common sequel of exposure to irritant gases both in civilian and in military life. In poisoning with gases that are very water soluble the damage may be confined to the upper respiratory tract. The gases that are relatively insoluble in water exert their chief effect on the lungs. The result is thrombosis of pulmonary blood vessels, concentration of blood in the pulmonary capillaries, outpouring of blood and serum into the alveoli, followed by bronchopneumonia and death, or by bronchiectasis and multiple abscess formation. Symptoms of gas poisoning may become apparent immediately after exposure or may be delayed for as long as twelve hours. The usual treatment of warmth and breathing of oxygen enriched air mixtures is helpful in some cases, but it frequently does not prevent the onset of pulmonary oedema, nor does it abolish it once it has developed. Anoxia is the usual result of the inhalation of irritant gases. It is due to swelling of the alveolar cells which prevents the usual absorption of oxygen, to the narrowing of bronchial pathways due to spasm of injury, and to the presence of serum, blood, and mucus in the alveoli. The bronchiolar spasm

causes an increased respiratory effort which in turn causes an increasingly negative intrapulmonary pressure. This exerts a suction effect on the pulmonary capillaries which produces oedema or aggravates it. To overcome this effect the application of positive pressure breathing was advised. It has proved to be useful both in cardiac oedema and in the oedema due to inhalation of poison gases. The positive pressure used is from 3 to 6 cm. of water and is applied during inspiration and during expiration. A contraindication is the presence of shock where the venous return to the heart is impeded and where raising the intrathoracic pressure further interferes with the venous return. Favorable results have been observed if positive pressure breathing is carried out with air alone, but the admixture of 40 to 70 per cent of oxygen is more effectual. The closed circuit respiratory mask is a simple means of administering the mixture under pressure. To control expiratory pressure, holes of various sizes are provided on the mask, and the pressure can thus be regulated. In actual treatment the positive pressure should be started at 3 cm. of water and worked up slowly to 6 cm. When discontinuing treatment, pressure is either reduced slowly, or the patient may be tried without the mask for short periods of time which are gradually lengthened. The inhalation of a nebulized spray of 1 per cent epinephrine or 1 per cent Neo-Synephrine at intervals of two to three hours has also been found useful.—*The Treatment of Pulmonary Edema Due to Gas Poisoning in War and in Civilian Life, A. L. Barach, New England J. Med., February 24, 1944, 230: 216.*—(*H. Marcus*)

Encapsulated Effusion and Heart Failure.—Encapsulated interlobar effusion in heart failure is not common. In a series of 368 cases of heart failure, 11, or 8 per cent, showed evidence of interlobar effusion. Effusions of this type are supposedly the result of antecedent infection of the intrapleural space which has resulted in adhesions between the pleural layers leaving the interlobar space the only locality in which fluid may accumulate. However, encapsulated interlobar effusion is also seen in cases where no infection of the lung or pleura had been present, as far as could be ascertained by history. An alternate theory assumes that it may then be the result of repeated attacks of heart failure with effusion, with deposition of fibrin and eventual adherence of the pleural leaves. Lateral X-ray films frequently serve to distinguish interlobar effusions from tumors of the lung or mediastinum.—*Encapsulated Pleural Effusion Due to Heart Failure, A. H. Russakoff & T. Weinberg, New England J. Med., March 30, 1944, 230: 370.*—(*H. Marcus*)

Penetrating Chest Wounds.—The experiences of a chest surgical team during the African campaign are compiled. In all, 291 cases were treated in three different localities. The impression was gained that cases were handled best when they were treated within two or three days after the injury at a forward base hospital. In field hospitals farther forward not much more can be done than closure of sucking wounds of the chests. Foreign bodies are best not tackled in such a field unit, but are left in place until the patient arrives at the base hospital. In the closure of sucking wounds, tight closure of the deeper layers and loose stitching of the skin is advised, so that drainage may proceed easily. Penetrating chest wounds show different healing tendencies depending on the agent responsible. Stab and bullet wounds heal faster than shell, mine or mortar wounds, and infection is usually less severe. Metallic foreign bodies caused less infection than fragments of bone and clothing. Sulfanilamide was given routinely to patients en route from the front to the forward base hospital. The dose was 2.5 g. every twelve hours. Smaller more frequent doses could not be given due to transportation difficulties. Other drugs, such as sulfathiazole, were not given because it was found impossible to maintain a high enough fluid intake to avoid renal complications. Sulfadiazine might have been most desirable, but was scarce and costly. More

than half the cases, or 187, were complicated by haemothorax. Of these, 62 were infected. It seems best to aspirate the haemothorax as completely as possibe without air replacement. A small amount of air may be admitted if the patient's comfort demands it. Infected haemothoraces need drainage. Aspiration is performed daily or every other day until the pus is too thick. Then air-tight intercostal drainage is begun and, when this no longer suffices, rib resection is performed. In empyemata due to trauma, there is no rule as to when it is "safe" to perform rib resection. It is, therefore, preferable to resect the rib under general anaesthesia. The anaesthetist can then administer positive pressure if few adhesions are found and the lung collapses. Water-sealed air-tight drainage is necessary in any case. Pleural foreign bodies may be removed at the time of the rib resection if they are accessible. If not, they are left for a later stage. Clotted haemothorax was found in 6 per cent of the cases. The reason why blood should clot in the pleural cavity is not quite clear, but one of three conditions was usually operative: delay in aspiration, infection or intrapleural foreign body. Clotted haemothorax, unless very small, must be removed. This is done by posterior thoracotomy with resection of an inch of the sixth rib near its angle. The underlying lung may show contusion, atelectasis or pneumonia. Contusion may make the patient very ill but recovery is the rule. The incidence of pneumonia in this series cannot be given because on X-ray examination this condition merges with contusion. Pneumonia in the uninvolved lung was present 10 times. Cerebral complications were rare. They were observed 4 times, 3 of them being due to air embolism and occurring shortly after wounding, and one was due to an infected pulmonary thrombus, twenty-two days after wounding. Foreign bodies within the lung offer special problems, depending on their size and location. Small centrally located foreign bodies are usually left in place. If they are larger than 2 x 1 cm. they must be removed, and also if they are located near the periphery or near the mediastinum. In this series, 7 intrapulmonary, 7 mediastinal and 14 intrapleural foreign bodies were removed. Wounds involving the abdomen as well as the chest are very serious. In the early stages it may be difficult to state definitely that no abdominal involvement is present. In case of doubt, the general surgeon will prefer to do a laparotomy. The gross mortality in this series was 6 per cent. The figures for a field hospital are considerably higher because more seriously wounded men are seen who never reach the forward base hospital. At a base hospital where patients are admitted about two weeks after wounding their chances for survival are, of course, much better, and the mortality is only 4 per cent. Altogether, 19 patients died, 25 were more or less permanently disabled, and 5 were transferred in poor condition. These figures include a follow-up of two to three months in most cases. The uninfected cases did better than the infected ones. One hundred and twenty-two patients were returned to duty or transferred to convalescent camps. These returned to duty within three months.—*Penetrating Wounds of the Chest, W. F. Nicholson & J. G. Scadding, Lancet, March 4, 1944, 246: 299.—(H. Marcus)*

Rehabilitation of Chest Cases.—A centre of rehabilitation of medical and surgical chest cases was set up designed to meet the needs of those convalescing from such diseases as pneumonia, empyema, or wounds, and operative procedures. The average patient, upon discharge from the hospital, manifests a marked degree of respiratory inefficiency. This is due to a variety of causes, notably weakness and inefficiency of the respiratory muscles from prolonged bed-rest, damage to the bony thorax, such as malunion of ribs, angulation of ribs and irregularities of new bone formation, and thickening and adherence of the pleura. Inflammatory conditions of the lung are often followed by pulmonary fibrosis, or there may be actual loss of lung tissue, and emphysema of the remainder. Pain during the illness frequently produces a

scoliosis which seriously interferes with chest expansion. When a patient is first admitted to the centre, he is subjected to a complete workup including history and physical examination, chest X-ray and fluoroscopy, and a variety of pulmonary function tests such as determination of vital capacity and its subdivisions, maximum breathing capacity and minute volume. The rehabilitation staff is present at the fluoroscopy and defects needing their special attention are pointed out to them. Measurement of chest and abdominal expansion, and of the vital capacity, are a rough but useful guide to the patient's progress and are repeated every two weeks. The rehabilitation program is administered in classes each of which calls for progressively more severe exercises. The first grade stresses breathing exercises, and in operative cases these are actually started before the operation, and recommenced immediately thereafter. In the next grade, shoulder movements, bending and rotation movements of the chest are taken up. The higher grades stress bicycle riding, use of pulley and weight machines, foot ball and ball throwing. Later runs of various lengths are added, starting with 200 yards and going up to 2 miles or more. After the course is finished, and when the patient is judged to be as fit as possible, he is subjected to recheck of the physiological tests mentioned above, and to a standard exercise test which measures pulse rate and pulmonary ventilation.—*Rehabilitation of the Chest Case, F. R. Edwards, Lancet, January 15, 1944, 246: 81.*—(*H. Marcus*)